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— with international search report
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15 May 2003
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: A SECONDARY STRUCTURE DEFINING DATABASE AND METHODS FOR DETERMINING IDENTITY AND GEOGRAPHIC ORIGIN OF AN UNKNOWN BIOAGENT THEREBY

(57) Abstract: The present invention relates generally to the field of investigational bioinformatics and more particularly to secondary structure defining databases. The present invention further relates to methods for interrogating a database as a source of molecular masses of known bioagents for comparing against the molecular mass of an unknown or selected bioagent to determine either the identity of the selected bioagent and/or to determine the origin of the selected bioagent. The identification of the bioagent is important for determining a proper course of treatment and/or irradiation of the bioagent in such cases as biological warfare. Furthermore, the determination of the geographic origin of a selected bioagent will facilitate the identification of potential criminal identity.



WO 03/001976 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/20336

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G01N 33/48
US CL : 702/19

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 702/19, 27; 435/6, 7.1, 91.1, 91.2; 703/11

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|------------------------|
| X | US 5,981,190 A (ISRAEL) 09 November 1999, see columns 2-6. | 1-6, 9-15, 17-31, & 34 |
| X | US 5,451,500 A (STAPLETON) 19 September 1995, see especially the abstract and the section entitled SUMMARY OF THE INVENTION in columns 3-8. | 1-6, 9-15, 17-31, & 34 |
| X | US 5,436,129 A (STAPLETON) 25 July 1995, see especially the abstract and the section entitled SUMMARY OF THE INVENTION in columns 5-10. | 1-6, 9-15, 17-31, & 34 |
| X | US 6,074,831 A (YAKHINI et al.) 13 June 2000, see especially the abstract and the section entitled SUMMARY OF THE INVENTION in columns 2-8. | 1-15 & 17-34 |
| X | US 5,745,751 A (NELSON et al.) 28 April 1998, see especially the abstract and the section entitled SUMMARY OF THE INVENTION in columns 2-6. | 16 |

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

| * Special categories of cited documents: | |
|---|--|
| "A" document defining the general state of the art which is not considered to be of particular relevance | "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention |
| "E" earlier application or patent published on or after the international filing date | "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone |
| "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art |
| "O" document referring to an oral disclosure, use, exhibition or other means | "&" document member of the same patent family |
| "P" document published prior to the international filing date but later than the priority date claimed | |

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| Date of the actual completion of the international search 14 December 2002 (14.12.2002) | Date of mailing of the international search report 03 FEB 2003 |
| Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230 | Authorized officer <i>Dorothea Lawrence</i> Ardin Marschel Telephone No. 703-308-0196 |

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/20336

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claim Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claim Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

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☐

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

PCT/US02/20336

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-10, drawn to methods of identifying an unknown bioagent using a database, product amplification, molecular mass determination, and comparison to known bioagents.

Group II, claim(s) 11-15, drawn to databases having cell-data positional significance for the alignment and non-alignment of data-containing cells for designating a structural feature of a polymer.

Group III, claim(s) 16, drawn to methods of reconciling first and second files involving data-cell records, a backup file, a reconcile file, and copying various files.

Group IV, claim(s) 17-25, drawn to a service for providing information related to a bioagent utilizing a database of masses and delivering a response to a requester from a master file.

Group V, claim(s) 26-35, drawn to methods of determining a geographical origin of a selected bioagent using a database of molecular masses.

The inventions listed as Groups I - V do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The Special Technical Features of each of Groups I - V are distinct as summarized in the above descriptions for each Group. It is noted that each Group is directed to a different and distinct Special Technical Feature.

Continuation of B. FIELDS SEARCHED Item 3:

WEST, CAS, EMBASE, MEDLINE, BIOTECH ABS, WPI, covering search terms: pcr, amplify, primer, conserved, mass, spectroscopy, service, master, file, reconcile, database, first, second, copy, backup